

**Titre:** Tuning particle-particle interactions to control Pickering emulsions  
Title: constituents separation

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**Date:** 2019

**Type:** Article de revue / Article

**Référence:** Sabri, F., Berthomier, K., Wang, C.-S., Fradette, L., Tavares, J. R., & Virgilio, N.  
Citation: (2019). Tuning particle-particle interactions to control Pickering emulsions  
constituents separation. Green Chemistry, 21 (5), 1065-1074.  
<https://doi.org/10.1039/c8gc03007c>

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**Version:** Matériel supplémentaire / Supplementary material  
Révisé par les pairs / Refereed

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## Document publié chez l'éditeur officiel

Document issued by the official publisher

**Titre de la revue:**  
Journal Title: Green Chemistry (vol. 21, no. 5)

**Maison d'édition:**  
Publisher: Royal Society of Chemistry

**URL officiel:**  
Official URL: <https://doi.org/10.1039/c8gc03007c>

**Mention légale:**  
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<https://doi.org/10.1039/c8gc03007c>

# Supporting Information

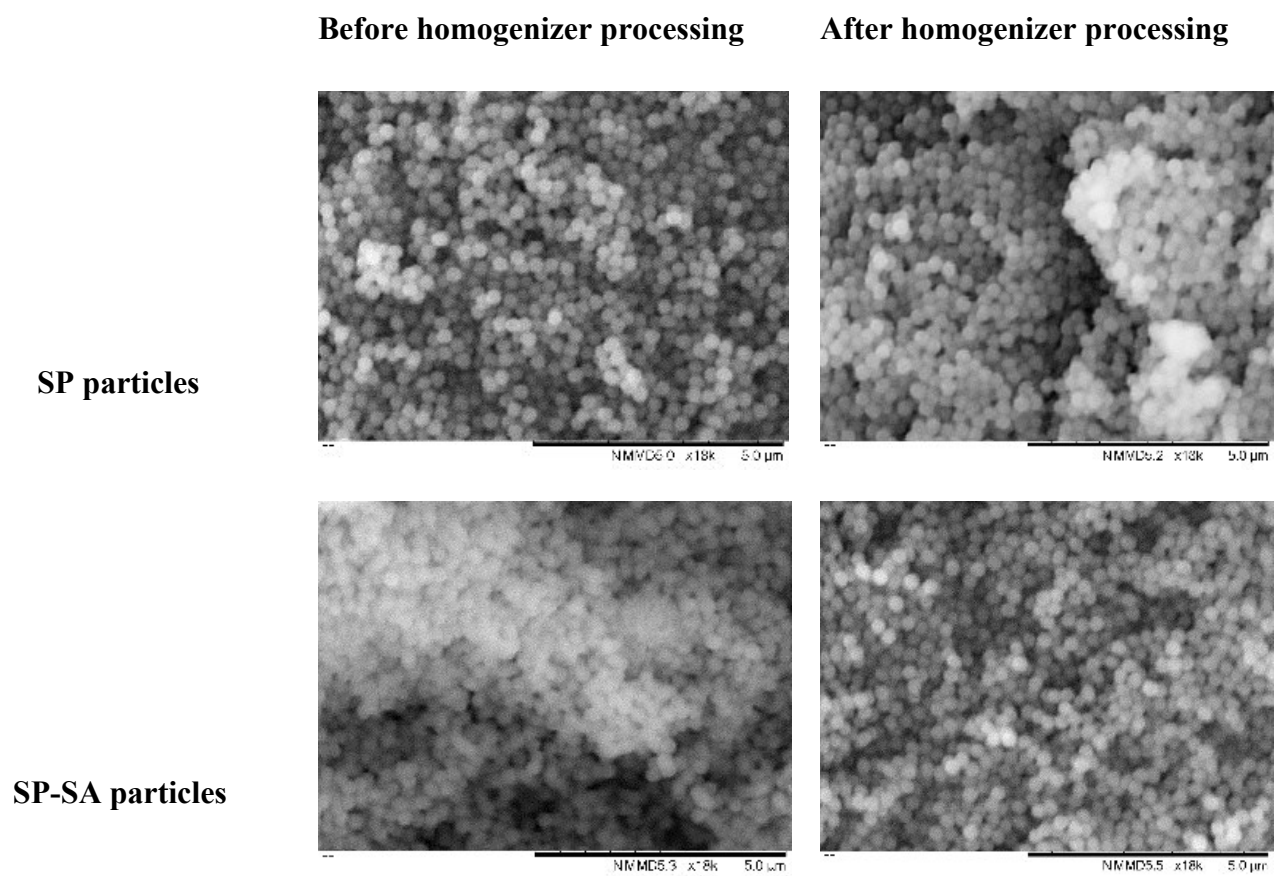
## Tuning Particle-Particle Interactions to Control Pickering Emulsions

### Constituents Separation

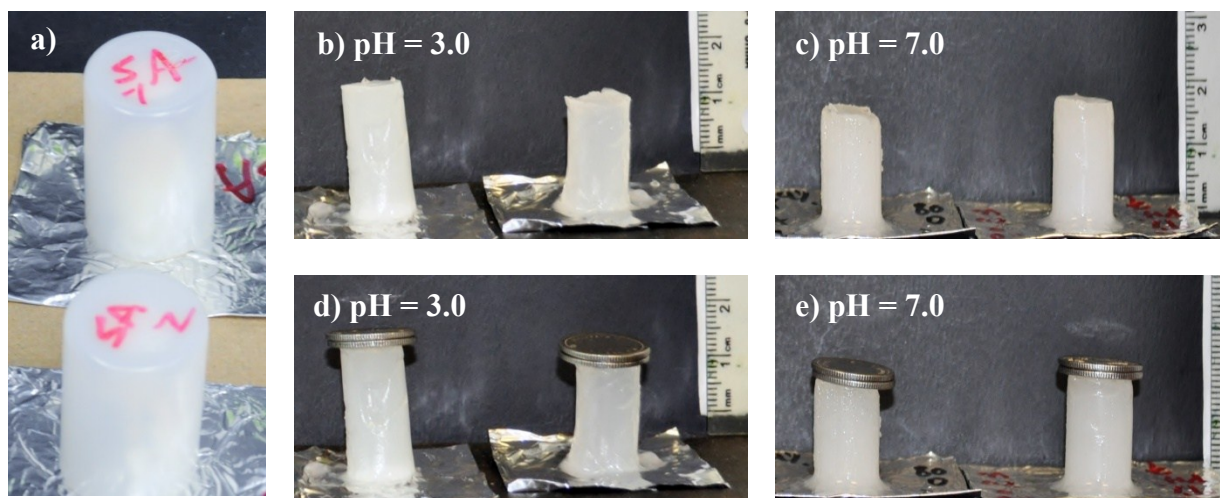
*Faezeh Sabri, Kevin Berthomier, Chang-Sheng Wang, Louis Fradette, Jason R. Tavares and*

*Nick Virgilio\**

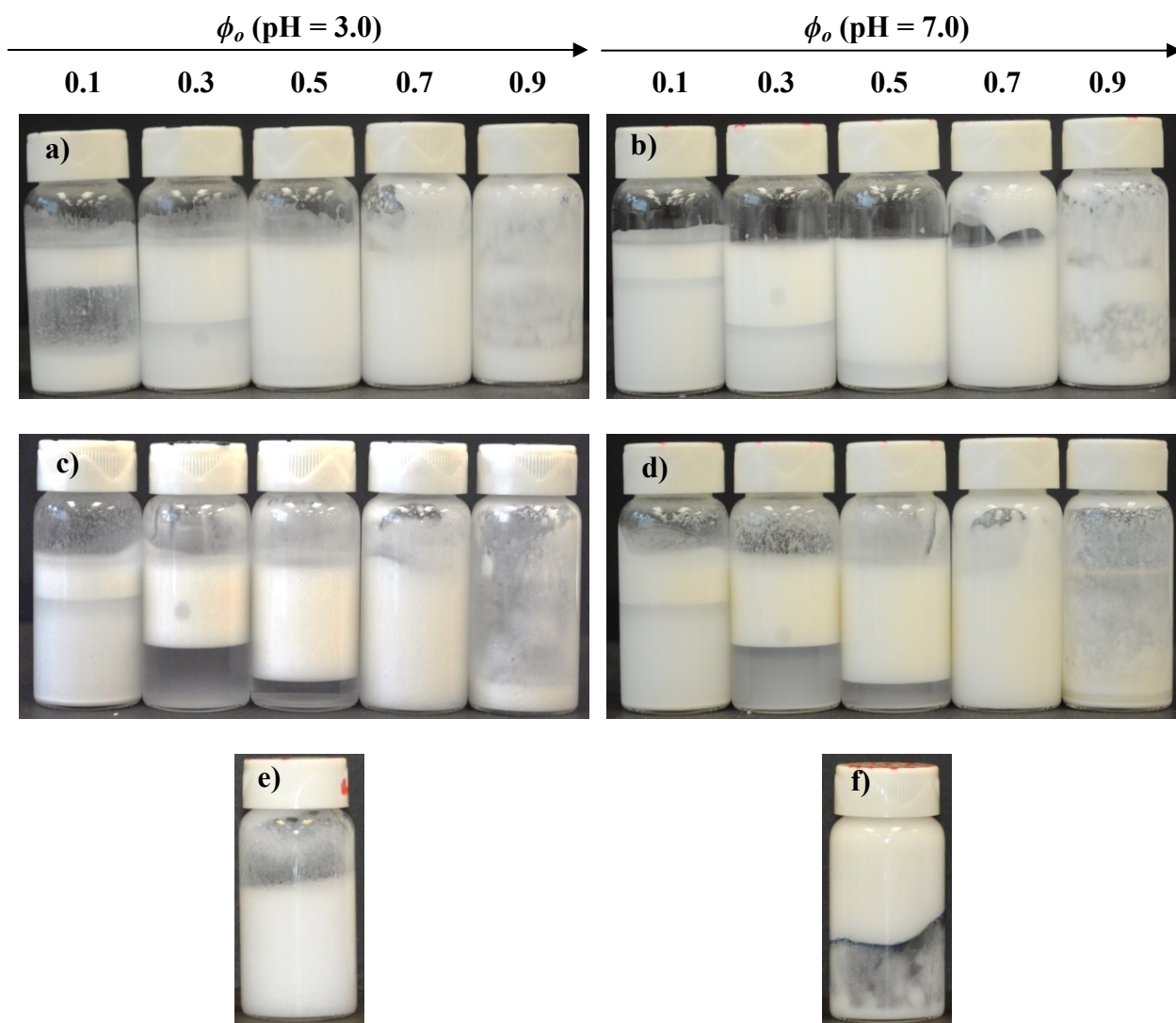
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Canada



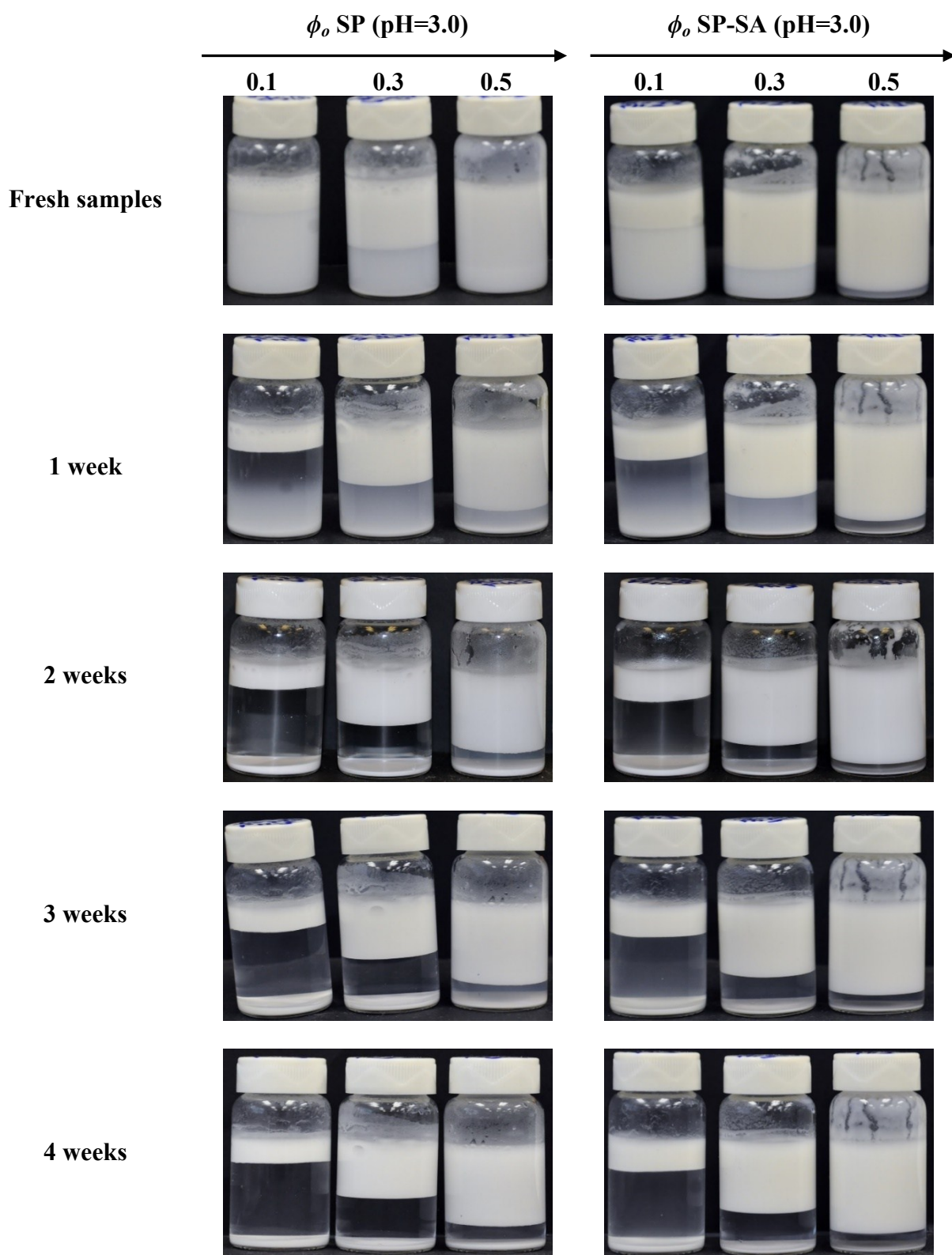
**Figure S1.** SEM micrographs of SP and SP-SA particles before and after homogenizer processing.



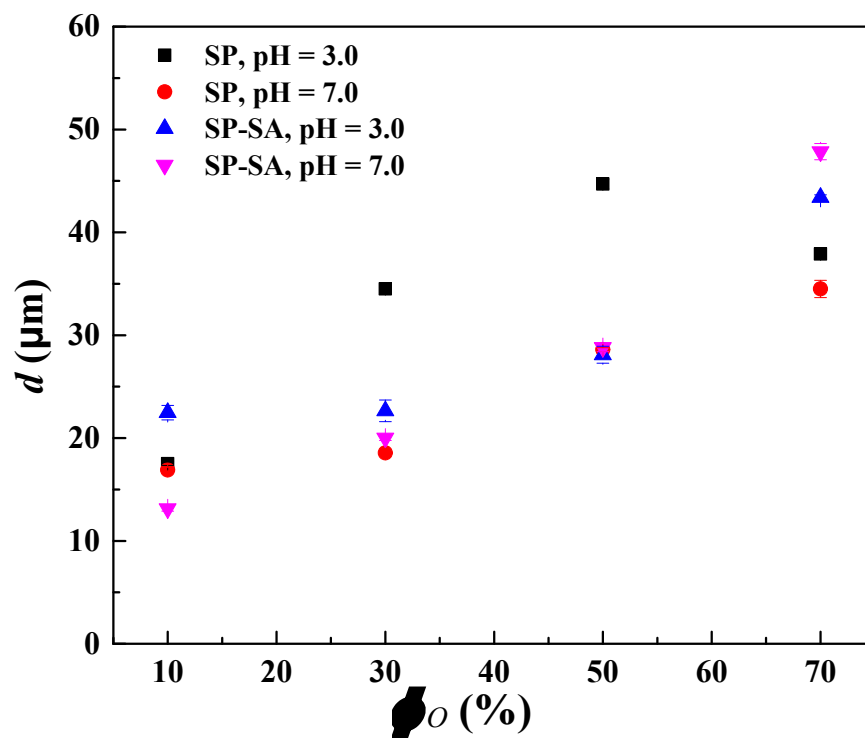
**Figure S2.** Pictures of concentrated oil-in-water Pickering emulsions comprising 4% SP-SA particles ( $\phi_o = 0.8$ ) when contained into the plastic molds (a), removed from plastic molds (b, c), and under compressive stress (d, e).



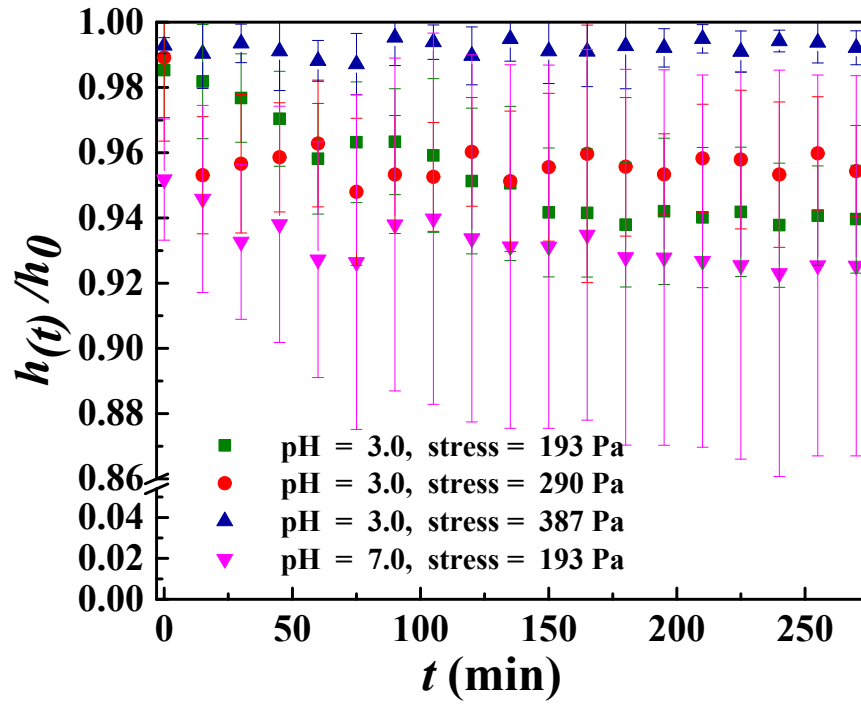
**Figure S3.** Effect of oil volume fraction  $\phi_o$  on emulsion aspect, with 4% (w/v) particles: a) and b), emulsions prepared with unmodified silica particles (SP) at pHs 3.0 and 7.0, respectively; c) and d), emulsions prepared with sodium alginate-modified particles (SP-SA), at pHs 3.0 and 7.0; e) emulsion composed of SP particles (4% w/v) at  $\phi_o = 0.8$ , compared to f) emulsion composed of SP-SA particles (4% w/v) at  $\phi_o = 0.8$ .



**Figure S4.** Emulsion stability in time at 3 different oil volume fractions  $\phi_o$ , and constant 4% (w/v) particles.

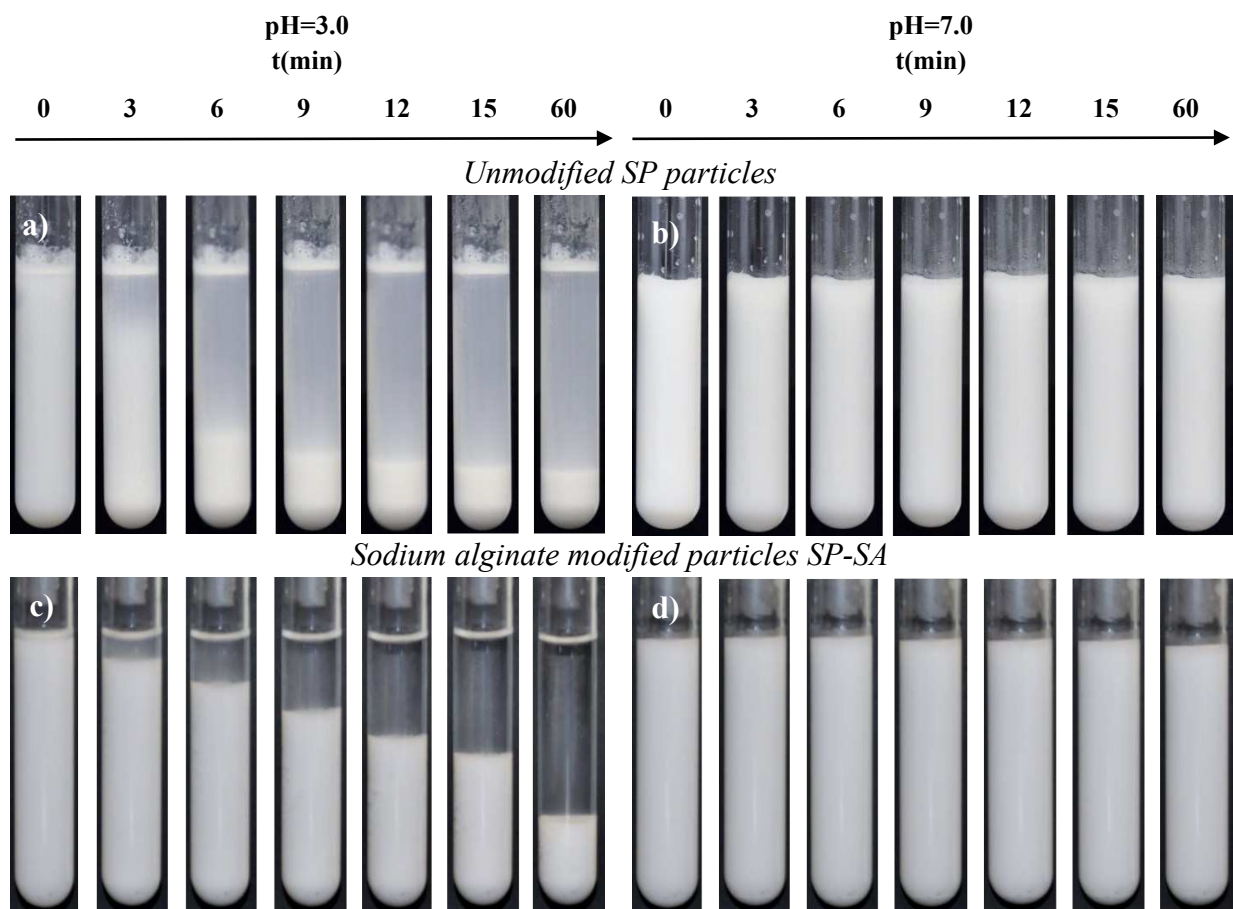


**Figure S5.** Number average diameter  $d$  of oil droplets as a function of oil volume fraction  $\phi_o$ , for both SP and SP-SA particles, at pH 3.0 and 7.0, as obtained by laser diffraction (Mastersizer).

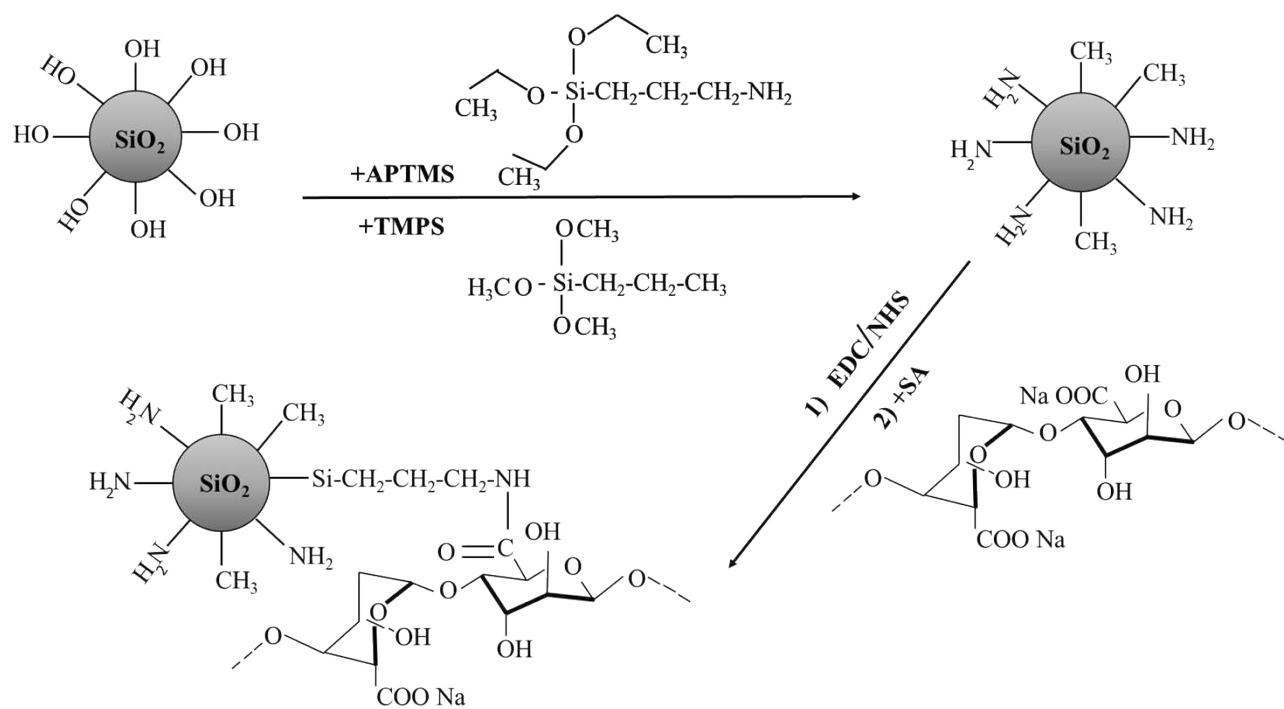


**Figure S6.** Normalized height ( $h(t)/h_0$ ) with the error bars as a function of time  $t$  and applied stress on molded concentrated emulsions ( $\phi_o = 0.8$ ) comprising 4% SP or SP-SA particles, at pH 3.0 and 7.0.





**Figure S7.** Pictures of the particle's behavior during sedimentation in water (height of test tube = 15.3 cm) for SP (a, b) and SP-SA (c, d), over 60 min at pHs 3.0 and 7.0.



**Scheme S1** Reaction Schemes to modify SP particles with APTMS, TMPS and SA molecules respectively